# T06D01 – (6.1) ****Rates of Reaction****

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. 6.1.1 Define the term rate of reaction. (1)

6.1.3 Analyse data from rate experiments. (3)

* 1. What is a rate? List real every-day examples of rate changes.
  2. What factors affect reaction rates?
  3. How can concentration be used to measure the rate of a reaction? (Draw a diagram)
  4. How is rate calculated? What are the units?
  5. 0.04 mol of a substance is produced in a 2.5dm3 vessel in 20 seconds. What’s the rate of reaction?
  6. 22 grams of CO2 is produced in 15 seconds in a vessel of capacity 4dm3
  7. Acidified hydrogen peroxide (H2O2) and KI(aq) react according to the following equation:

2H+(aq) + H2O2(aq) + 2I-(aq) 🡪 I2(aq) + 2H2O(l)

It was found that after allowing the reactants to react for 30 seconds.

* + 1. Calculate the average rate of formation of I2 in 30s:
    2. Provide a rate calculation for the other four materials (both products and reactants)
  1. In a balanced equation, show how the rates of depletion and formation can be calculated and related to each other:
     1. What does a negative or positive sign indicate?
  2. How do the graphs of concentration over time relate for reactants and products?

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| --- | --- |
| Graph for Reactant change in Concentration | Graph for Product change in Concentration |
|  |  |

* 1. How can the instantaneous rates of reaction

|  |  |  |
| --- | --- | --- |
|  | **Reactants** | **Products** |
| **Graph** |  |  |
| **Instantaneous Rate Calculation** |  |  |

* 1. Using a graph, show how the rate changes over time: (remember, the slope will give you the rate)

1. 6.1.2 Describe suitable experimental procedures for measuring rates of reactions. (2)
   1. Reactions Producing a Gas
   2. Change in Mass
   3. Change in transmission or absorbance of light
   4. Change in concentration measured with titration
   5. Change in concentration measured with conductivity
   6. Clock Reactions